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SOME OBSERVATIONS ON THE NURSING OF TYPHOID FEVER

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WE are taught in our hospital training that a thorough knowledge of the nursing of typhoid fever and its accidents and complications covers almost the whole field of medical nursing. We have learned that it is primarily a disease of the intestines, accompanied by a great waste of muscular tissue and pronounced disturbances of the nervous system.

Absolute rest and cleanliness of body, an abundance of fresh air, carefully prepared diet, intelligent bathing and sponging, thoughtfulness in guarding against complications, capability and intelligence to act in an emergency, and the knowledge that the condition of the brain and nerve centres must be regarded as a part of the physical welfare of the patient are essential points in the nursing of typhoid patients.

We know that the basis of bodily cleanliness both in health and sickness, but particularly in sickness, is a thorough soap-and-water bath once in the twenty-four hours. Let this, combined with an abundant supply of oxygen, be the foundation of hygienic treatment of a typhoid patient. Give the bath in the morning, when it is customary to change the bed and body clothing, thus giving the patient a fresh feeling throughout. Use good soap and plenty of water, with a little bicarbonate of soda, borax, or ammonia added. Go thoroughly over the whole body, paying particular attention to the groin, axilla, and feet. Soak the feet well, and rub in cocoa-butter when the skin tends to form in horny scales. Complete the bath by rubbing the patient from head to foot with equal parts of alcohol and water. Bear in mind that the cleansing of the skin induces perspiration, assists desquamation, keeps the pores open, and thus aids the absorption of oxygen as well as the escape of

poisonous excretions. Let the skin, as well as the lungs, act as an oxygen medium. For this reason the clothing should be light and a good supply of fresh air should be admitted during the day and night. Keep up the temperature of the room to 65° or 68° F., but do not exclude the external oxygen from the body by heavy clothing.

While it is usual to carefully attend to the mouth, the nose is generally neglected. Never allow the sordes to accumulate in the posterior nares. A typhoid frequently has a tendency to pick his nose; if it is kept in a proper state of cleanliness, this source of irritation is done away with. There is as much danger and discomfort in a neglected nose as in a neglected mouth. The plugging of the nostril causes the patient to breathe entirely through the mouth, thus increasing the tendency to fissures of the tongue and lips. Sordes in the posterior nares may produce inflammation of the throat, which may extend to the Eustachian tubes, and the unclean nose may thus be the primary cause of otitis media. Or the sordes may be carried in particles by the breathing down into the bronchial tubes and lungs, inducing irritation of these organs, which may result in bronchitis, or pneumonia of more or less septic type.

The accumulation of sordes can be readily detected by the dry, whistling breathing. Take a pledget of absorbent cotton saturated with a five per cent. solution of boric acid; press the pledget well back into the nares; do this several times to soften the sordes, then use the dull end of a hair-pin or a dull curette to remove the mass. Spray the nostrils with listerine or Seiler's solution.

In cleansing either nose or mouth great care must be taken not to cause bleeding, for the abraded mucous membrane may be a source of reinfection. In this connection it might be well to mention that in addition to the usual hygiene of the mouth it should always be cleansed after taking milk, since milk forms a particularly favorable culture-medium for bacteria, which may then be carried to the stomach, exciting indigestion and flatulence. Thompson says that a tongue-bath may often be used to advantage,—that is, to hold the mouth full of fluid for several minutes at a time, when such moisture is absorbed by the mucous membrane.

Attend to the nose and mouth carefully, and you will avoid one important source of complications and add greatly to the comfort of the patient.

For the tenacious mucus give a teaspoonful of equal parts of glycerine and lemon-juice, or a teaspoonful of a glycerine and borax mixture. Any alkali assists in dissolving the mucus. The same relieves the distress from the hard, tenacious mucus in pneumonia.

Whatever means are employed for bringing down a temperature, let the patient regard the process with pleasure, and not with dread.

In private practice sponging and the pack are chiefly relied upon. Endeavor to be an artist in sponging. Know *why* you sponge. Remember that the primary object is not the sudden reduction of temperature, but the indirect control of it by the soothing of the nerve-centres. However limited the time for giving a sponge, never appear to be in a hurry. Have everything in readiness before removing the night-dress. Make long, firm, straight, downward strokes, paying particular attention to the large blood-vessels and to the spine. If you have half an hour to spend on the sponge, put twenty minutes of the time on the inner sides of the limbs and down the back. Let your touch be gentle, firm, and soothing. Never allow your patient to shrink from the sponge. With the average man, and especially woman, there is an intense dislike to the shock of cold water. But if you wish to give a cold sponge and he shrinks at the first touch, take two basins, one tepid and the other cold; take the first stroke of tepid: that will prepare him for the second stroke of cold. The same principle applies to the wet pack. Apply the sheet wrung out of warm water and gradually reduce its temperature by sprinkling with cold water. Avoid all resistance. Do not allow your patient to use his strength when you can save it. Let the sponge or pack be a rest, not an exertion. If the delirium is violent and the nervous symptoms very marked, the hot sponge is at times more beneficial than the tepid or cold. Go over the whole body, keeping up the temperature of the water from a supply pitcher. Give the back the last attention, and before sponging it put on a slip night-dress opening down the back. Then take the long strokes down the spine as hot as the patient can bear, and in ten or fifteen minutes he may drop to sleep under your hands. Should you gain that object, gently arrange the night-dress and bedclothing, and be careful not to disturb him. In general neuritis, which is not an uncommon complication, it may be necessary to suspend the sponging for a time, or the body may be gone over in *pats* rather than strokes, drying off in the same manner. When handling a limb in neuritis make pressure with the hand upward towards the trunk, as the downward traction stretches the inflamed nerve and causes more intense pain.

In delirium a feather pillow should not be used. If you cannot afford a water pillow, a three-quart rubber bottle filled one-third with tepid water and the air excluded makes a very good substitute. A hair pillow is cooler than one made of feathers.

Never scold a typhoid patient. Speak firmly but gently; agree and sympathize with illusions rather than argue. Notice carefully if the

patient is worrying and find out the cause. He may dislike a water pillow; if so, do not use it. A picture, a wall paper, or a curtain pattern may be bothering him and he cannot tell you, or it may be a colored screen, a colored pincushion, or a perforated cane chair that may be causing him annoyance; all bright colors and patterned things should be kept out of a typhoid's sight. You cannot nurse by rule in typhoid fever, as no two cases run exactly alike, and it develops more idiosyncrasies than any other disease.

When tympanites is present and applications are ordered great care should be exercised in their use. All applications, hot or cold, should be made of a sufficient size to cover the crests of the ilia, as the bony prominences then help to bear the weight of the poultice, stupe, or ice-coil. In using an ice-coil place a piece of flannel between the coil and the skin, and keep the whole in place by a binder fastened down the centre with a perforation on either side to allow the ends of the coil through. The patient can then be turned from side to side, thus preventing hypostatic pneumonia, bed-sores, and all other inconveniences and dangers of the one position, without displacing the coil. Let your poultice be hot, light, well beaten, and spread not more than one-half inch in thickness. That may also be kept in place with a binder. In using turpentine on either stupe or poultice it is better to lightly vaseline the whole surface of the part before making the first application. The skin is then much more tolerant of heat and does not blister or redden quickly. An ice-coil is a much better appliance for cold than an ice-bag on account of its light weight and the little difficulty of keeping an even temperature. If an ice-bag is used, suspend it from a cradle and do not allow its full weight to rest on the abdomen in either tympanites or hemorrhage. To reduce tympanites an enema of soapy water, one pint; glycerine, four ounces; spirits of turpentine, one dram, given slowly and low down, produces increased peristaltic action and expulsion of fæces and gas. Or the abdomen may be gently massaged twice a day, the course of the colon being followed from the right groin, with olive oil, one ounce; spirits of turpentine, one dram. The enema must not be "suddy," as too much soap causes irritation and tenesmus. Only add sufficient soap to make the water a milky color. If the distention is great, be careful to relieve the weight of the bedclothes by a cradle. One can be readily made from a barrel-hoop cut in two and crossed.

Hemorrhage is, with the exception of perforation, the most dangerous and the most alarming of the accidents of typhoid fever and calls for the greatest skill and good judgment on the part of the nurse. Here absolute physical rest must be rigidly enforced. Although it is

the custom to raise the foot of the bed on the first indication of hemorrhage, I think it is a proceeding that may bear some discussion. We raise the foot of the bed in collapse, heart-failure, and syncope to stimulate the circulation by sending more blood to the heart and brain. But the intestinal organs are situated so near the centre of circulation that in strengthening the circulation the amount of blood at the point of hemorrhage may be increased instead of decreased. In my opinion it is better not to elevate the foot of the bed till the *pulse* gives the indication. Apply cold by means of the coil or ice-bag already referred to, and if ice be inserted into the rectum, make the pieces conical in shape by dipping in hot water. Not even in private nursing should a bed be changed after hemorrhage without the sanction of the physician, and then the greatest care should be exercised. To keep a patient lying on his back in soiled linen for twenty-four hours may encourage hypostatic pneumonia and a bed-sore, but neither of these complications are necessarily fatal, while arterial hemorrhage is of the greatest possible danger. In changing the bed-linen have two assistants, and on no account turn the patient from side to side. Sew the edge of the clean draw-sheet to the edge of the soiled one. Arrange the clean sheet in the usual manner. Instruct one assistant to place hands beneath the buttocks, putting both hands in from one side, and the second assistant to place hands under the shoulders and back. Have the patient gently raised or eased off the bed while the clean draw-sheet is pulled through. In this way the patient is caused little disturbance. From the first appearance of hemorrhage it is well to be prepared for future escape by packing a good quantity of cotton wool and absorbent cotton in and about the buttocks, thus saving much soiling of the linen.

Sudden collapse or heart-failure in typhoid fever may be called an emergency, and as such the nurse must be prepared to meet it. The heart-action may not respond to the applied heat and elevation of the lower extremities. It is best to rely upon the hypodermic for heart and respiratory stimulants, and not to give them by the mouth, for the stomach refuses to absorb, and the effort of vomiting tends to waste the flickering strength of the patient. Strychnine and brandy may be called the standard heart stimulants, but from one-eighth of a grain of morphine and one hundred and fiftieth of a grain of atropine, given hypodermically, we get three results,—we quiet the patient, slow the heart-action, and stimulate the vasomotor system. You will know in ten minutes' time if the result is satisfactory. There is less danger of a recurrence of the collapse if the patient is rallied gradually, so it is better to repeat whatever stimulants are employed rather than to give the larger dose at one time.

Phlebitis may occur in any stage of the disease. When a pain of a severe or aching character is complained of in the limbs, it is well to suspect phlebitis and act accordingly. Remember, there is as great a danger of dislodging the clot while it is forming as when it is already formed; under no circumstances, therefore, should you massage the part, but at once elevate the limb, apply dry or moist heat, and let the application be kept in position by a "many-tailed" bandage, not a roller, as the latter necessitates too much disturbance.

Of perforation little can be said, except to guard against this most fatal of all accidents of typhoid fever. Perhaps the best safeguard is a strict attention to and careful watching of the diet.

IMPORTANCE OF DIET.

Osler says that pure milk should never be given. Always dilute with water, lime-water, or aerated water. The stools of a patient on strict milk diet should be examined with great care to see if the milk is entirely digested. When masses of curds are found in the stools, vary the diet with broth or beef-juice. If there is a tendency to constipation, do not give lime-water, but dilute the milk with Vichy water, soda water, or apollinaris.

In diarrhoea omit aerated waters and give lime-water in the proportion of one part of lime-water to three of milk, but in this be guided by the character of the stools. When the diarrhoea is profuse and the milk undigested, it is well to follow a regular table of diet. Peptonized milk and barley-water may be given in equal parts, one ounce of each every two hours, or oatmeal-water may be substituted for the barley-water and is frequently more grateful to the patient, although the quantity of nourishment must be thus restricted; water should be very freely given in order to compensate for the quantity of fluid withdrawn from the tissues by the profuse secretion of the bowels. Watch the diet carefully when there is an inclination to vomit. Give nourishment in small quantities, very hot or very cold, whichever is more agreeable. A teaspoonful of frozen peptonized milk or a teaspoonful of hot milk or coffee may remain on the stomach when all other diets are rejected. If the patient is in a condition to express a preference for any particular form of allowable diet, it is always well to make the experiment of humoring him, as frequently the food desired is what will be retained. If the vomiting is persistent, notice the condition of the eyes, the teeth, and the ears. Intolerance of light, where there is already defective vision, an ulcerated tooth, or an ear plugged with wax may cause reflex vomiting, or it may be caused by some nerve irritation which cannot be located.

In the first and second weeks of typhoid it may not be necessary to awaken a patient for nourishment, but in the third and fourth weeks, as the strength goes down, care must be taken to increase the quantity of nourishment, and judgment may be exercised in awakening him. If he is sleeping quietly and the pulse is regular and not varying in character, let him sleep on for some hours, giving a little more than the ordinary quantity of nourishment when he awakes. But if the pulse is very weak or shows irregularity, it might be well to arouse him for nourishment and stimulants. In arousing a patient it is perhaps better to do so by speaking rather than by placing your hand upon him. The sound of a voice he is accustomed to is less apt to startle him than the touch of a hand. We cannot emphasize the fact too strongly that the diet of a typhoid patient should never be left within his reach. There is no greater waste of strength than allowing a patient to reach out and help himself.

To bring your patient successfully through the febrile stage of typhoid fever is but one-half the battle. We might almost call the long, slow convalescence a disease in itself. Generally speaking, in the febrile stage we have the accidents to guard against, and in the convalescent stage the complications. With the decline in temperature we get the heavy sweats and great muscular wasting. There is the sub-normal temperature, weak heart-action, and frequently an impaired mental condition. To prevent chill, to build up the tissues, and to give the patient cheerful hygienic surroundings should be our effort in convalescence. With the first sweat change the clothing from cotton to flannel; protect the chest with a light layer of wool or fold of flannel. Sponging for the reduction of temperature is no longer a necessity, but there is the morbid condition of the skin to deal with, indicated by the profuse sweats and sometimes severe desquamation. During the sweat, dry the patient off under the clothing. When it is over, give him a quick, warm alcohol rub and put on dry, warm clothing. Give him the soap-and-water bath at night and a salt-and-water sponge in the morning. The salt has a general tonic effect, and on that account is better administered in the morning than at night. When severe desquamation is met with the salt and alcohol must be omitted, but cocoa-butter or olive oil may be well rubbed in at night over the whole body and a thorough bath given in the morning, using castile soap and a little borax in the water. By giving the skin careful hygienic treatment we tend to reduce the waste of tissue, assist desquamation, overcome the susceptibility to cold, and add greatly to the comfort of the patient, both physical and mental. To keep the convalescent free from excitement and give him cheerful surroundings will materially benefit his mental condition.

It is a wise plan to move the patient as soon as possible from the room in which he has spent the febrile stage of the disease, and when he is sufficiently strong to allow him to spend the morning in one room and the afternoon in another with a different exposure, getting the benefit of the sun in both.

In this paper I have not attempted to cover the whole field of nursing in typhoid, but only to touch upon some points which I have found by experience to be of much importance, and which are not always sufficiently brought out in our text-books or lectures.

THE PHYSIOLOGICAL BASIS OF HYDROTHERAPY

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HYDROTHERAPY is the systematic use of water of varying temperatures as a curative agent. Undoubtedly much misunderstanding has arisen with regard to the phrase hydrotherapy, or water-cure, since the value of water depends not so much upon itself as upon its capacity for heat or heat conduction. It is the most convenient medium we have for controlling the withdrawal or addition of heat to the body. Indeed, the term *thermotherapy* might better be used, since practically it is the varying degree of heat or cold employed which accomplishes the purpose. Heat and cold are but relative terms of the same energy, considered from the stand-point of normal body-temperature. Air or vapor might serve the purpose—and, indeed, hydrotherapy is supplemented by hot-air or vapor baths. But water has a capacity for heat four times that of air and is therefore more efficient for modifying body-temperature. Therefore let it be well understood that it is through the modification of the heat of the body primarily that we secure the therapeutic result.

The varying degrees of heat and cold may be arbitrarily expressed as follows: Cold signifies a temperature below 65° F.; cool, between 65° and 80°; tepid, between 80° and 90°; warm or neutral, between 90° and 100°; hot, above 100°. Very hot or very cold indicate extremes of temperature.

The physiological basis of hydrotherapy, then, depends upon its influence on the production and elimination of animal heat.

Animal heat is the resultant effect chiefly of oxidization—*metabolism*, so called. This largely takes place in the capillary system.